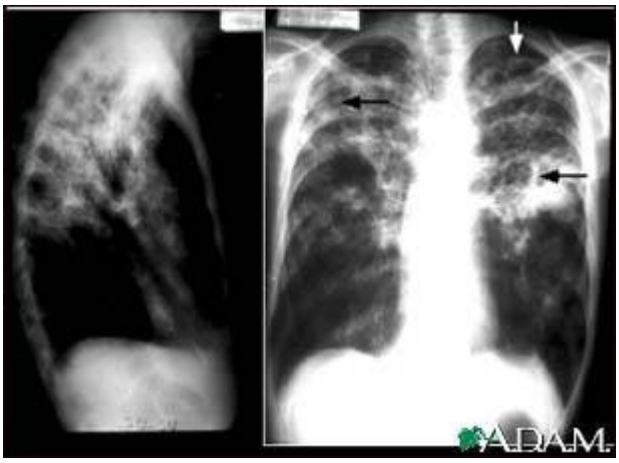
TB and HIV Coinfection

Updated October 2011



Chest x-rays showing advanced pulmonary tuberculosis. Photo courtesy of A.D.A.M. and NIH PubMed Health.

Tuberculosis (TB), a bacterial infection caused by *Mycobacterium tuberculosis,* is one of the leading causes of mortality and morbidity among people infected with HIV worldwide. Those living with HIV are vulnerable to opportunistic infections, and the risk of developing TB is estimated to be 20 to 37 times greater for HIV-infected individuals than among those without HIV disease (WHO, 2011a). In addition, HIV promotes the progression of latent TB infection (LTBI) to the active disease stage and the relapse of disease in previously treated patients (WHO, 2011b).

HIV-infected persons with either LTBI or active disease can be effectively treated for TB, thus the CDC recommends routine screening and treatment to lessen the impact of this opportunistic infection among people living with HIV/AIDS (CDC, 2009). The guidelines for prevention and treatment of TB in HIV-infected adults and adolescents are summarized to the right. In addition, in the effort to control tuberculosis in the US, CDC recommends that patients who are initiating treatment for active TB be routinely screened for HIV disease. Persons suspected of having TB and certain persons with LTBI should also be offered voluntary testing, counseling regarding HIV-TB coinfection, and referral for HIV treatment services when necessary (CDC, 2005).

TB IN THE UNITED STATES

In 2010, a total of 11,181 TB cases were reported in the United States, for a rate of 3.6 per 100,000 population - the lowest recorded since national tuberculosis reporting began in 1953. The TB rate among foreign-born persons was 11 times greater than among US-born residents. Within the US-born cases, the greatest racial disparity was for non-Hispanic Blacks, whose rate was 7 times greater than that of non-Hispanic Whites.

Among TB cases who had a known HIV test result in 2010, 8.6% were coinfected with HIV disease* (CDC, 2011). In 2009, with 7,051 TB cases having a known test result, there were 706 patients (10%) who tested positive for HIV (CDC, 2010).

Screen, Test, Treat

- All persons should be screened for latent TB infection (LTBI) at the time of HIV diagnosis.
  - The tuberculin skin test: positive for HIV-infected persons if reaction is ≥ 5mm.
  - The interferon gamma (IFN-γ) *in vitro* assay: positive if TB bacteria-specific IFN-γ is detected.
- Those with negative tests should be re-tested in the future based on their TB risk category.
- Those with positive tests for LTBI should undergo chest radiography and clinical evaluation for active TB.
- HIV-infected persons should be treated for LTBI if they tested positive, if they have been in close contact with people with active/ infectious TB, or if they have a history of untreated or inadequately treated healed TB.
- Persons with diagnosed or suspected active TB should start multi-drug anti-TB treatment regimen immediately.

See CDC (2009) for more information.

TB IN VIRGINIA

Virginia is a medium TB incidence state and was ranked eleventh in the nation in 2010, with 268 cases reported (incidence rate = 3.4 per 100,000 population). The majority of cases (65%) occurred among Virginia residents who were born outside of the United States. Among US-born residents, Blacks were 5 times more likely to have TB than Whites. In 2000, foreign-born TB cases surpassed US-born cases for the first time and have remained the majority each year since. In 2010, 65% of Virginia TB cases occurred among the foreign-born (VDH, 2011).

HIV Coinfection

In Virginia, the epidemiology of TB-HIV coinfection is similar to that of tuberculosis itself, affecting high-risk populations which are US-born African Americans and foreign-born residents from countries with high prevalence of TB or high prevalence of TB and HIV.

From 2001 to 2010, 164 TB cases were reported with HIV coinfection. Because the numbers are relatively small, year-to-year fluctuations are common. In this time period, Virginia reported a low of 8 coinfected cases in 2010 and a high of 29 in 2001.

Males comprised 67% of the coinfected cases between 2001 and 2010. Eighty-nine percent of all cases were among those aged 25 to 65, with 2.4% reported among people 65 and older and one percent among those aged 14 or younger. Out of the 164 cases, 63% were Blacks, 18% Hispanics, 12% Whites and 5% were among Asian/Pacific Islanders. TB-HIV coinfection in Virginia is primarily an urban problem, with only 8% of the cases reporting from rural areas. US-born residents represented 46% of all TB-HIV cases during this ten-year period and of this group, 75% were Blacks.

HIV infection is the strongest known risk factor for the progression of latent TB infection into active TB disease (CDC 2005; WHO, 2011b).

The risk of developing TB is estimated to be 20 to 37 times greater in people living with HIV than among those without HIV disease (WHO, 2011a).

All HIV patients should be screened for latent TB infection and active tuberculosis disease; all TB patients should be tested for HIV disease (CDC 2005; CDC 2009).

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*HIV-TB coinfection data does not include data from California and Vermont.